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TB CARE II

QUALITY IMPROVEMENT OF TB SERVICES

Assessment of Provider Adherence to TB Evidence-based Standards and Guidelines in Bangladesh

APRIL 2013

This study is made possible by the support of the American people through the United States Agency for International Development (USAID). The findings of this study are the sole responsibility of Jhpiego and University Research Co., LLC, and do not necessarily reflect the views of USAID or the United States Government.

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DISCLAIMER

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Acknowledgements: TB CARE II, is funded by United States Agency for International Development (USAID) under Cooperative Agreement Number AID-OAA-A-10-00021. The project team includes prime recipient, University Research Co., LLC (URC), and sub-recipient organizations Jhpiego, Partners in Health, Project HOPE along with the Canadian Lung Association; Clinical and Laboratory Standards Institute; Dartmouth Medical School: The Section of Infectious Disease and International Health; Euro HealthGroup; and The New Jersey Medical School Global Tuberculosis Institute.

This study was produced for review by the United States Agency for International Development. It was prepared by University Research Co., LLC, and was authored by Fatema Zannat MBBS, MPH; Silvia Holschneider, DrPH, MPH; Refiloe Matji MD, MPH; Alisha Smith-Arthur MSc; and Ashaque Husain, Dr. Md.

The study was endorsed by the NTP, WHO colleges, civil surgeons at the district level, and Upazilla Health and Family Planning officers (UHFPO) at the sub-district level.

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Acronym List

ACSM	Advocacy, communication, and social mobilization
BRAC	Bangladesh Rural Advancement Committee
DOTS	Directly Observed Treatment Short course
MDR-TB	Multi-drug resistant tuberculosis
NIDCH	National Institute of Diseases of the Chest and Hospital
NTP	National Tuberculosis Program
TB	Tuberculosis
TOT	Training of trainers
UHC	Upazila Health Complex
URC	University Research Co., LLC
VCT	Voluntary Testing and Counseling
WHO	World Health Organization
XDR-TB	Extensively Drug Resistant Tuberculosis

Background

Since the introduction of Directly Observed Treatment Short course (DOTS) in 1993, Bangladesh has made significant progress in the management, prevention, and care of tuberculosis (TB). Case detection and treatment rates have increased, and DOTS coverage is at 100% of the population where DOTS services are available. Despite these achievements, TB remains a major public health problem in the country. Bangladesh ranks sixth among the world's 22 highest burden TB countries. It is estimated that more than 64,000 people in Bangladesh die every year due to TB – resulting in a mortality rate that is 45% higher than in Southeast Asia. Multi-drug resistant tuberculosis (MDR-TB) is an emerging threat, with MDR-TB rates among all newly diagnosed cases estimated at 2% and among previously treated cases at 28%.¹ HIV prevalence in the adult population is low, as is the proportion of HIV-positive individuals among TB cases (0.02% and 0.1% respectively).²

Bangladesh recently adopted new objectives of “universal access” for quality diagnosis and treatment in the community, aiming to halve TB deaths and prevalence to achieve the TB-related Millennium Development Goals* and eliminate TB as a public health problem by 2050. To do so, the National TB Control Programme (NTP) adopted the WHO [World Health Organization] Global and Regional Stop TB Strategy in its 2012–2016 Revised National Strategic Plan.³ Quality TB care has become a priority concern in Bangladesh, so the NTP has developed numerous guidelines and standards to explain the different steps for managing TB service delivery. For example, in 2008 it published updated and comprehensive National Guidelines and Operational Manual for TB Control. The NTP has issued separate guidelines for adult TB, MDR-TB, TB/HIV, TB infection control, and procurement and supply management. Guidelines on pediatric TB are currently being finalized. Standards on diagnosis and treatment and laboratory manuals have been produced, as have forms, formats, a standardized system for record keeping, and systems for supervision, monitoring and evaluation, among others (see Box 1).

Box 1. Content Areas of Bangladesh's National Guidelines and Operational Manual for TB Control

- General information about TB
- Structure of the National TB Programme
- Case finding and diagnosis
- Treatment
- TB in children
- Recording and reporting system
- Supervision, monitoring, and evaluation
- Supply of drugs, lab supplies, and documentation materials
- Drug resistant TB
- Infection control
- TB-HIV co-infection
- Public-private mix for TB control
- Advocacy, communication, and social mobilization

Having explicit standards – whether for inputs, process, or outcomes – provides a good benchmark for assessing the quality of care. Standards provide a reference point for assessing provider or system performance. By identifying the current and expected levels of quality, compliance or adherence with such standards can be measured easily.⁴ A recent literature review conducted by the USAID-funded TB CARE II project on provider adherence to evidence-based guidelines and protocols shows that despite the availability of such guidelines in high-burden TB countries, provider adherence remains a challenge.⁵ Causal factors of low adherence include: lack of coordination between multiple health care structures, difficulties procuring drugs,⁶ differences in the type of health care provider performing the service (i.e., public versus private),^{7,8,9} lack of detailed policies

* Increase the TB case detection rate >70% and the cure rate with DOTS >85% by 2015.

specifically for MDR-TB management,⁶ lack of human resources, poor monitoring and evaluation of guideline implementation,¹⁰ and providers' insufficient knowledge of TB.^{11,12,13} Failure to fully implement TB standards can result in treatment failures and increased drug resistance, requiring intensified treatment and additional resources.

A number of tools and approaches have been developed and tested to improve provider adherence to treatment guidelines and thus enhance the quality of TB services. However, many of the existing approaches target specific, compliance-related blockages (i.e., training to improve provider performance) without linking them to a broader TB systems improvement framework that coherently addresses the barriers TB providers face in delivering high-quality services. In this context, TB CARE II is conducting a series of studies to investigate factors influencing provider adherence to evidence-based TB guidelines. These studies are being carried out in Bangladesh, Zambia, and Kenya through TB CARE II partners. Study findings will be used to develop a quality improvement manual to help enhance provider adherence to TB clinical and service delivery guidelines.

This report provides a summary of a study carried out by University Research Co., LLC (URC) in Bangladesh. The study assessed adherence to TB guidelines on national, regional/district, and facility-based levels from TB managers' and providers' perspectives, provider observations, audits of patient records, and interviews with TB patients and persons with presumptive TB. Many of the findings are presented by type of service facility or provider – i.e., public (government), NGO, and private – since in Bangladesh the NTP implements TB control in close partnership with NGOs (see Table 1) in the country's 64 districts, 490 upazilas, 4451 unions, and over 68,000 villages. Community-based DOTS is mainly implemented through village doctors and *shyasthya shebikas* (community health volunteers). Additionally, 110 non-NTP public providers and 81 private providers are involved in TB control.³

The report concludes with recommendations that can be used by TB CARE II and national level TB partners to better target interventions to improve provider adherence to TB standards.

Table 1. Areas of Government-NGO Collaboration in TB DOTS in Bangladesh

Area of collaboration	Government	NGOs
Implementation	<ul style="list-style-type: none"> National guidelines Overall coordination 	<ul style="list-style-type: none"> District-level coordination, reporting Upazilla-level NTP service provision, provision of DOT, link with communities Community-based DOT provision through village doctors and community health workers
Case finding and case holding	<ul style="list-style-type: none"> Equipment/supplies Referral centres 	<ul style="list-style-type: none"> Diagnosis, treatment, and follow-up
Training	<ul style="list-style-type: none"> Training materials Training of trainers (TOT) 	<ul style="list-style-type: none"> Local training
Drug supply	<ul style="list-style-type: none"> Central procurement Distribution 	<ul style="list-style-type: none"> Local storage Supply indent
Monitoring and supervision	<ul style="list-style-type: none"> Registers/forms Overall monitoring and supervision 	<ul style="list-style-type: none"> Registration/reporting Local monitoring and supervision
Advocacy, communication and social mobilization (ACSM)	<ul style="list-style-type: none"> National campaigns 	<ul style="list-style-type: none"> Local campaigns

Source: National TB Control Programme (NTP). Revised Strategic Plan for National Tuberculosis Control Programme, 2012–2016. Dhaka, Bangladesh: NTP.

Objectives

The adherence study objectives were to:

1. Generate information on the knowledge and skills of providers to provide “standard” TB services,
2. Measure the extent to which providers follow national and service-delivery standards,
3. Compare adherence to guidelines and service provision at public and private facilities,
4. Generate information on the existence of systems for maintaining TB service delivery capacity and assess level of patient/client satisfaction. and
5. Generate information on TB patients’ perceptions of the quality of care received at facility levels.

Methods

Research Design

The study was undertaken from November–December 2011, in conjunction with the Bangladesh NTP, as part of a multi-country study by TB CARE II to determine providers’ adherence to evidence-based TB standards and guidelines.

A cross-sectional design was used to collect data from NTP managers at the national and district levels; facility managers at public and private facilities at district and sub-district levels; public, NGO, and private health care providers who screen and treat TB patients/persons with presumptive TB; and TB patients/person with presumptive TB. The national level TB managers were selected purposively to ensure adequate representation from those in charge of TB decision-making and supervision. Purposive sampling was also used to select 10 of Bangladesh’s 64 districts, based on their lower TB case notification rate. Sub-districts/upazilas, unions and villages were selected by random sampling to reduce sampling bias. Each facility has only one facility manager and one health service provider in charge of TB service delivery, so these professionals were chosen through purposive sampling. TB patients at the facilities were selected randomly and only from public facilities because of greater patient flow. For the chart audits, samples were chosen by systematic sampling. Sample sites are listed in Table 2.

Table 2. List of Sites

District	Sub-district/Upazila	Union	Village
Gazipur	Sadar	Pubile	Maghdubi
Brahmonbaria	Sarail	Shabuzpur	Molish
Shariatpur	Sadar	Binodpur	Dighirpar
Sunamgonj	Taherpur	Badam Ghat	Karie Sara
Laxmipur	Raipur	Shahbajpur	Karowa
Gopalganj	Muksudpur	Moharajpur	Kholahat
Naogaon	Badalgachhi	Vandarpur	Sonapur
Manikgonj	Sadar	Garpara	Gilonda
Rajshahi	Poba	Hargram	Badaghat
Faridpur	Bhanga	Azimnagar	Cowkande

* On the national level, interviews were conducted in Dhaka with NTP managers and with patients at the National Institute of Diseases of the Chest and Hospital (NIDCH), where chart audits were also conducted.

The study instruments consisted of seven structured questionnaires/assessments: interviewer-administered questionnaires for NTP and district/regional managers, facility managers, and exit interviews with TB patients and persons with presumptive TB; self-administered questionnaires for providers; provider observation questionnaires; and chart audits to determine how well patient data are being recorded for managing

TB patients. The tools (excluding those for the chart audits and provider observations) were translated into Bangla. They were based on internationally accepted standards for health services and were adapted by the URC Bangladesh staff to reflect relevant NTP-developed standards standards developed by the Ministry of Health and were pre-tested. The types of assessments, study populations, and sample sizes are listed in Table 3.

Table 3. Type of Assessment, Study Population, and Sample Sizes

Type of assessment	Sector	Study population	Number of respondents by assessment and level						Sample Size
			National	District	Sub-district/ upazila	Union	Village	Total	
NTP and District/Regional Manager Assessment (multiple-choice, structured interview)	Public	National NTP Line Director NTP Program manager NTP Deputy Program Manager National TB Reference Lab Head District Civil surgeons	4	11				15	24
	NGO	District NGO managers		9				9	
Facility Manager Assessment (multiple-choice, structured interview)	Public	Superintendent of hospital/sub-district/ Upazila Health and FP Officer		11	13	5	10	39	69
	NGOs	NGO facility/health center managers		5	9	2	7	23	
	Private	Private hospitals, clinic managers		6		1		7	
Chart Audit (checklist)	Public	NIDCH, Sadar Hospital, Upazila Health Complex (UH;C)	10	80	100	–	10	200	310
	NGO/ Private	Private hospitals and clinics, BRAC center, Damien center		20	70	20	–	110	
Provider Assessment (self-administered, multiple choice and open-ended)	Public	Public physicians, health assistants		14	17	5	12	48	83
	NGO	Doctor, field organizer, community health workers		3	6	2	1	12	
	Private	Doctors, village doctors, health assistants		6	9	3	5	23	
Provider Observation (checklist)	Public	District NTP service providers, including outdoor physicians		13	16	7	14	50	83
		Sub-district NTP service providers, including TB and leprosy control assistant							
	NGO	Doctor, community health worker, pharmacy providers		3	7	2	1	13	
	Private	Doctor, village doctor, outdoor physician		4	5	4	7	20	
Exit Interview for TB Patients and Persons with Presumptive TB (structured interview)		TB patients/persons with presumptive TB at NIDCH, district hospitals, Upazila/sub-district health complexes, and community-level clinics	19	44	25		22	110	110
Village Doctor Assessment (multiple-choice, structured interview)		Village doctors/traditional healers					18	18	18
Total								697	

Training of Data Collectors

Five data collectors were hired for this study, each covering two districts. In addition, two staff from TB CARE II who were working at NIDCH and who had skills and experience in TB program implementation were involved in the national level data collection.

A one and a half-day training was held for all data collectors in November 2011 to ensure that data collectors understood the study's purpose and the data collection tools. After the training, all tools were pre-tested at Gazipur and Manikgonj districts and subsequently finalized before the start of the data collection.

Ethical Considerations

The study was approved by the Bangladesh Review Committee, comprised of NTP Managers (Line Director, Program Manager, and Deputy Program Managers) and WHO personnel who reviewed the study protocol and assessment tools. In addition, an approval letter was obtained from NTP authorities concerning the participation in the study of civil surgeons and other Government/private service providers in each selected district and for data collection at the community level. The study protocol was also approved by URC's Institutional Review Board to ensure that the research adhered to the appropriate ethical and moral principles, namely, involving participants' understanding of the study's purpose, ensuring their absolute confidentiality and privacy, and collecting informed consent.

Data Analysis

The data were analyzed using SPSS for Windows. Due to small sample sizes, only frequency analysis was conducted.

Results

Systems

Structured interviews were held with 24 NTP managers at both national and district levels (see Table 3) to assess potential barriers to their TB-related adherence to setting performance targets; available and updated guidelines, TB registers, and TB/MDR-TB notification systems; mechanisms for forecasting, procurement, and distribution of drugs; capability of laboratories to perform TB tests; staff training; supervision and monitoring; and mechanisms of obtaining patient feedback.

At the facility level, interviews were held with 69 public, NGO, and private facility-level managers from the district to community levels to assess availability of basic inputs to provide quality services, including TB services; the inputs included TB/MDR-TB drugs, TB focal persons, availability of policies/guidelines, turn-around times for lab results, TB registers, TB/MDR-TB notification systems, infection control policies, and supervision and monitoring systems.

We conducted 310 chart audits at public, NGO, and private sector facilities from the national to community level to determine the quality of patient records.

The main findings of these assessments follow.

Annual Performance Targets

All TB managers at the national and district levels and from both public and private facilities responded that the NTP establishes annual performance targets. Two of the four national level respondents said that the NTP had reached these targets in the last five years. At the district level, 10 of the 11 participants said that the targets had been reached in that period.

Guidelines

Adult TB: Almost all national and district-level NTP managers (23 of 24) said that their offices had access to adult TB guidelines. These guidelines were last updated in 2009, and plan to be revised in 2013. Most (94%) facility-level TB managers also reported that they had access to these guidelines, with a lower percentage of private facility managers (71%) reporting having them than those in public (95%) or NGO (100%) facilities.

Pediatric TB: Most NTP managers said they had access to pediatric TB guidelines (21 of 24), referring to the child TB guidelines that are currently a component in the National TB Guidelines.* At the facility level, most TB managers (84%) said they had access to these guidelines, with higher percentages of public (86%) and NGO managers (86%) reporting access than private ones (71%).

MDR/XDR-TB [extensively drug resistant tuberculosis]: Most NTP managers (20 of 24) said that they had access to MDR-TB guidelines. However, at the facility level only 58% of TB managers did (perhaps due to the fact that only a few facilities in select parts of the country are currently equipped to manage MDR-TB patients). A higher percentage of public (66%) and NGO managers (59%) reported access to these guidelines, compared to private facility managers (14%). The first edition of Bangladesh's MDR-TB guidelines was published in 2009 and is being revised in 2012 to include community-based management (of MDR-TB). Currently, there are no XDR-TB guidelines in the country, as only two or three cases have been identified to date.

TB/HIV: While TB/HIV guidelines were published in 2009, only 12 out of 24 NTP managers said that their offices had access to them. Even fewer facility managers said they had access (32%), including 38% in the public, 33% in the NGO, and none in the private facilities.

Mobile/vulnerable groups: Only a third of NTP managers (8 of 24) said they had access to guidelines on mobile/vulnerable populations. Similarly, only 42% of facility managers said that they did, with higher percentages among the public (48%) and NGO facility managers (45%), compared to private facility managers (0%). The National TB guidelines have a section on vulnerable populations, but no separate guideline has been developed. Additionally, mobile/vulnerable groups have been addressed in the Bangladesh TB National Strategic Plan (2001–2015), and organizations that are working with these groups have adapted the language accordingly.

Infection prevention: TB infection control guidelines were published in December 2011 but have not yet been distributed to the field. This is reflected in the responses: almost all national level NTP managers

(3 of 4) said they had access to these guidelines, whereas 11 of 20 district NTP managers did. Only 58% of facility managers said they had access, most of whom were from NGO (71%) and public (57%) facilities. Only 29% of private facility managers said they had access. Of note is that the respondents who indicated having access may have been referring to the general guidelines on infection control where TB is one component.

TB Registers/MDR-TB Notification System

The NTP recording and reporting system consists of standardized cards, registers, and reports. A total of 13 formats are followed on TB record keeping. Data flow from the upazila to the district level, then ultimately to the NTP office. Specific TB forms focus on reporting and are sent to the NTP quarterly. The other forms remain on site as official records.

Almost all NTP managers said that they had a TB register system in place and in use (21 out of 24). Similarly, almost all said that they had a TB/MDR-TB notification system in place and in use (22 out of 24). Eighteen of the 24 said they had a mechanism for tracking treatment defaulters. At the facility level, most managers (87%) said they had a functioning TB register; however, only 50% of private facility managers said they did, compared to public (85%) and NGO managers (100%).

The findings from the 310 chart audits (clients ages 6–95, including 10 ages 6–15) to determine the quality of TB medical records follow:

National level: At this level, 10 chart audits were done at NIDCH, a facility that treats TB and MDR-TB patients and acts as the national reference laboratory for TB diagnosis. Overall, its record-keeping system was found to be satisfactory. However, it neither records TB/HIV co-infection cases nor provides slips for contact tracing.

While the NIDCH Voluntary Counseling and Testing (VCT) Center collects TB/HIV information, this information is not integrated into the national records. In addition, NGOs addressing HIV keep their TB and HIV records separate, and they are not integrated into the national record.

* TB CARE II will publish a stand-alone pediatric TB guideline this year (2012).

District level: At this level, 80 chart audits were conducted at Sador Hospital, a public facility in the NTP network that treats TB patients. Twenty chart audits were also conducted at NGO facilities, which maintain record-keeping systems under agreement with the NTP. The chart audits revealed that the record-keeping system is organized and updated, except for recording of TB/HIV co-infection cases and a lack of an adequate contact-tracing mechanism. For contact tracing, providers are only giving verbal information to TB patients, but these efforts are not recorded and contact slips are not provided.

Sub-district or upazila level: We conducted 100 chart audits with public sector facilities and 70 with NGO facilities. All 170 patient records showed that data are being recorded regularly using the standard formats. Every UHC prepares a report monthly comprising a few indicators to monitor its progress and achievements. Each UHC also prepares quarterly reports and attends quarterly performance review meetings at the district level. These records indicate that here also patients are not being asked about their HIV status or advised to get testing. Also, all 170 records indicate that facilities/service providers are not giving slips for contact tracing.

Union/village level: Thirty chart audits were conducted at the union/village level. There was no standardized record-keeping system at this level. Some NGOs provide their own form of record keeping. The reason for this is that the modality of TB service delivery is different at the

union/village level, where persons with presumptive and diagnosed TB are referred to sub-district-level facilities. The study found that union-/village-level facilities maintain a register book (not separate for TB) for recording patient data. Facility staff enter only basic information (i.e., name, age, sex, and reason for consultation) in the book. TB patients are referred to the UHC for diagnosis and treatment; UHCs are supposed to properly maintain TB records (on TB forms 1–13).

Essential Drug List

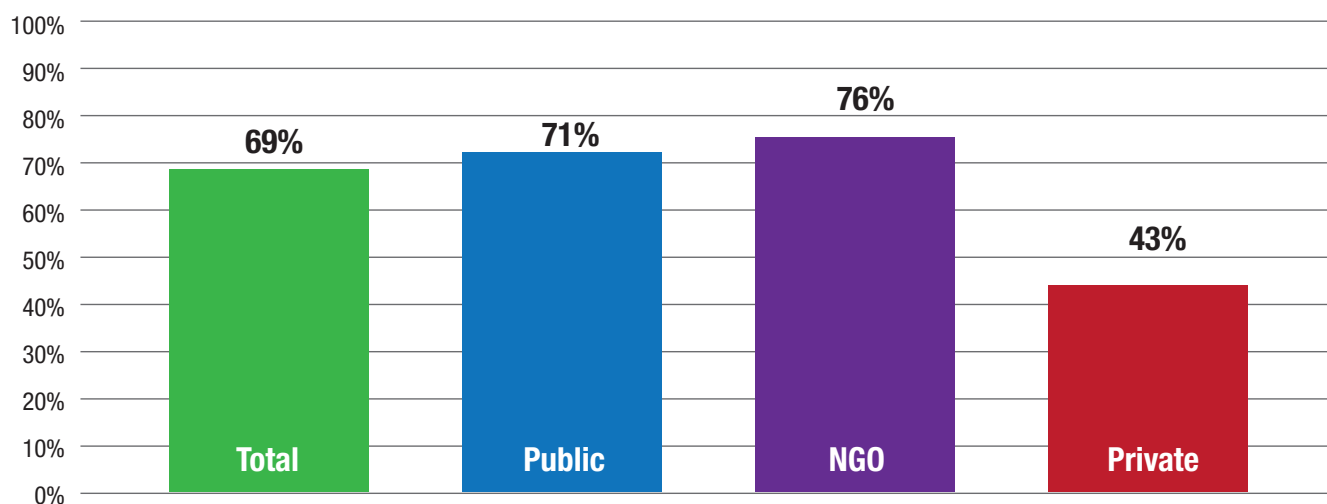
The WHO promotes having an essential drug list that lists drugs that cure the vast majority of illnesses and that should be affordable and available to everyone. Bangladesh's list was updated in 2008 to help ensure that drug supplies are adequately available to health providers working in all types of health care facilities, thereby providing the population better access to most essential drugs for their health needs.

Only 69% of facility managers said that their facilities had a copy of the list, with the highest percentage in the public and NGO sectors (71% and 76%, respectively). Only 43% of private facility managers said they had one (Figure 1).

Laboratory Manual

Similarly, 71% of facility managers said their facilities had laboratory manuals, again with the highest percentage among NGO facility managers (80%), slightly lower percentages among public facility managers (71%), and the fewest among private facility managers (43%).

Figure 1. Percentage of Facility Managers Citing Availability of Essential Drug List at Facility Levels



TB Services

Structured interviews with facility managers from public, NGO, and private facilities, ranging from district to community levels, indicated that TB services are being provided in about 80% of facilities – mostly public or NGO facilities (87% public, 83% NGO, and 28% private). For the public sector, most managers at the district and upazila levels (23 of 25) said their facilities provided TB services, whereas a slightly smaller proportion (10 of 14) on the union and village level said they did. Often, in Bangladesh, patients who present at the union and village level are linked with sub-district centers for TB diagnosis and treatment.

Facility managers largely reported that their facilities provided smear microscopy (72%), again mainly at public and NGO facilities (76% public, 76% NGO, and 33% private). Only 6% of them said that their facilities do cultures, and 36% said they offer radiography. Twenty-six percent (26%) of public sector managers said that their facilities offer HIV counseling and testing, whereas none of the NGO and private facilities did. Most of these services, if available, were offered mainly at district and upazila facilities. At the time of data collection, no facilities had GeneXpert machines for diagnosis (they are planned to be placed at the central and divisional level diagnostic centers within the year).

Drug procurement/TB drugs

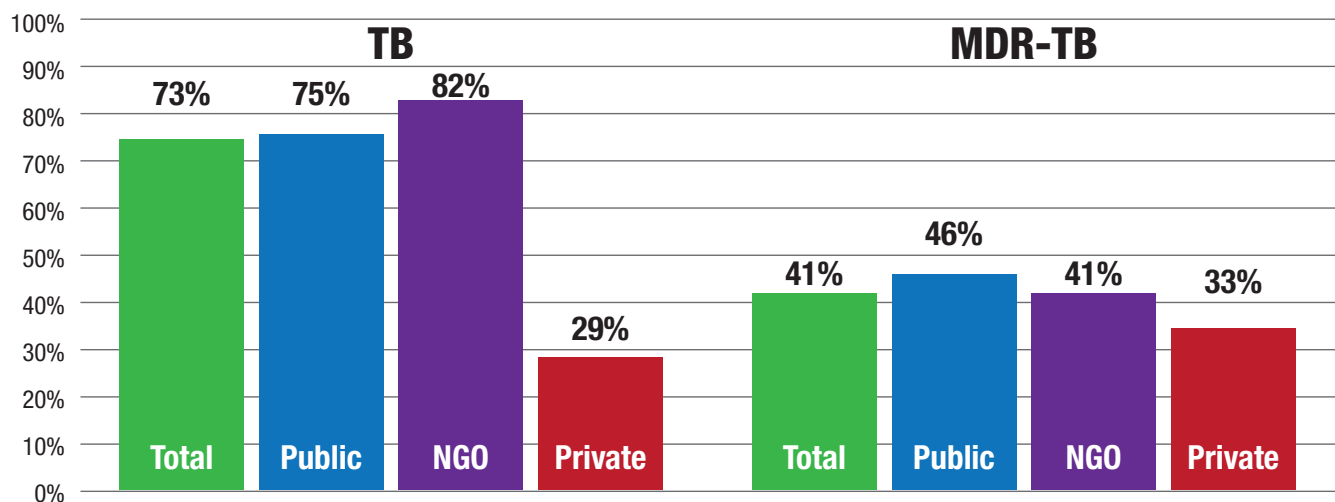
In Bangladesh, the central level of the NTP is responsible for the planning, procurement, and supply of anti-TB drugs, laboratory consumables,

and documentation materials to NTP implementing partners. Quantification of the requirement of anti-TB drugs is done at the central NTP level, which includes information about drug consumption and stock at upazila levels, together with case finding and treatment result reports.

Despite having a fairly strong managerial system for drug procurement, over a third (9 out of 24) of NTP managers said that they had experienced drug shortages in 2010. Drug shortages were especially common at the district level, with 8 of 20 managers citing shortages. National level managers indicated that, on average, they experience one month of drug shortages during the year, whereas district-level managers said they experienced four months of shortages on average during a year.

The majority (73%) of facility managers said their facility had TB drugs. Availability of TB drugs was lower among private (29%) than NGO (82%) and public facilities (75%). For public facilities, drug shortages seem to lie at the union and village level. The data show that most public sector facility managers at the district/upazila level (88%) said that their facility had TB drugs, whereas only 36% of those at the union and village level said they did. Only 43% of facility managers said their facilities offered MDR-TB drugs – again with a higher percentage of public (46%) and NGO (41%) reporting having these drugs than private facilities (33%). The results for MDR-TB, however, are expected, given that MDR is treated only in certain facilities (Figure 2).

Figure 2. Percentage of Facility Managers Citing Availability of TB and MDR-TB Drugs at Facility Levels



TB Focal Person

Among facility managers, 71% of facility managers said that their facilities had TB focal persons; 74% of public and 78% of NGO managers did; and only 29% of private facility managers did. Most (77%) of these focal persons have other duties as well.

Supervision

The National Guidelines for TB Control emphasize the importance of supervision as “a cornerstone for sustainability of different NTP activities.”¹⁴ The guidelines outline the process of supervision, tools for supervision such as a supervisory checklist, points to be focused on during supervision, and the need to submit supervision reports. According to the NTP, however, “Supervision by government staff has been hampered by transport and resource constraints. There are also concerns about the quality of supervision as feedback forms are not standardized.... There is limited coordination between the Government and NGOs in supervising the program.

The results of our assessments showed the following:

Supervisory mechanism to ensure adequate drug forecasting and procurement: Most (21 of 24) NTP managers said they had a supervisory mechanism in place to ensure appropriate drug forecasting and procurement. This type of supervision is mainly being conducted on a monthly to quarterly basis. Most (19 of 24) have guidelines for this type of supervision and provide feedback to facilities after each supervisory

visit (22 of 24). Similarly, most (23 of 24) reported that laboratory supervision is being conducted, usually on a monthly to quarterly basis. Here again, feedback is usually provided after each visit in written form with no follow-up action afterwards.

Three-fourths (74%) of facility managers said the facility had a TB supervisor, with most being reported at NGO (91%) and public sector (74%) facilities and very few at private sector facilities (17%).

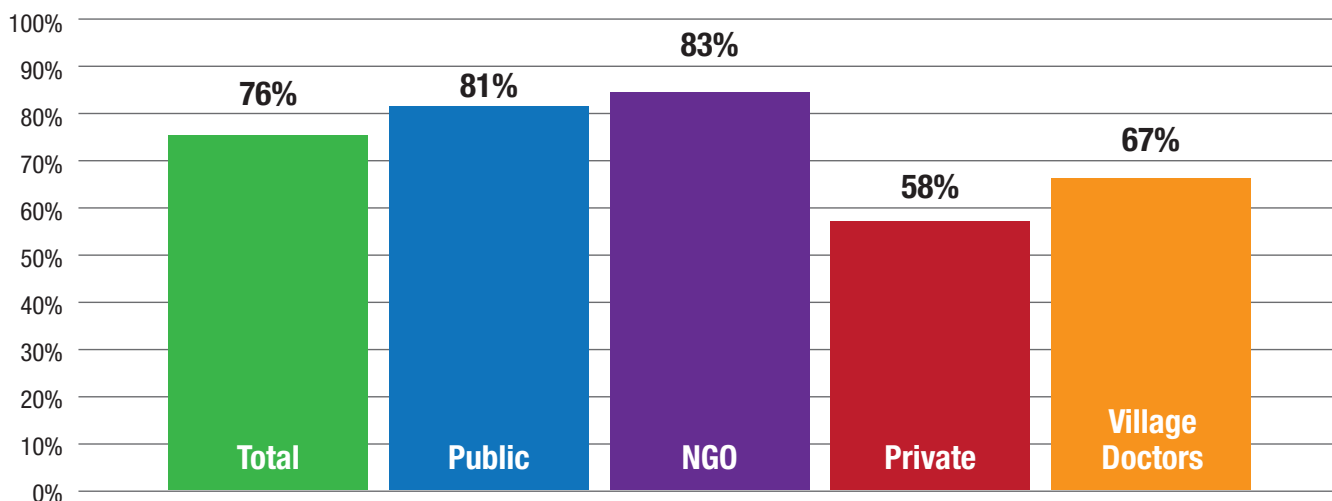
Supervision and mentoring of providers: The provider self-assessment showed that while most TB providers (76%) received supervision and mentoring on TB, one-fourth (24%) did not. Supervision and mentoring was higher among NGO (83%) and public sector (81%) providers than private sector providers (58%), including village doctors, pharmacists, health assistants, and private doctors.

Most village doctors said they had never received supervision and mentoring on TB (12 out of 18 or 67%) (Figure 3).

Training

According to the 2012–2016 National Strategic Plan for TB Control in Bangladesh, responsibilities for designing training materials lie mainly at the national level, and training of trainers takes place mainly at the district level. In addition, NTP guidelines were included in the curricula for basic training of different categories of health staff. NGOs carry out their own local-level training activities.³

Figure 3. Percentage of Providers Reporting Having Received Supervision and Mentoring on TB



The assessment asked NTP managers, public physicians, NGO physicians, private physicians, and village doctors of the level of training they received and found that:

- National level NTP managers said that 90% of their staff were trained in TB in the last 12 months (standard deviation 50%–100%).
- In the provider self-assessments, most providers said they had ever received a training/orientation on TB (73% public, 85% NGO, and 82% private providers); it is important to note that 17% of public (8 of 48), 18% of private (4 of 22), and 8% (1 of 13) of NGO providers said they had received no TB training.
- The large majority of village doctors said they were trained on TB (16 out of 18). Trainings were mainly conducted by large NGOs, such as BRAC and Damien Foundation, and through the UHC, using the same standard guidelines developed by the NTP.

The study did not ask about the quality of training, types of training materials used, training delivery, or the knowledge and behavioral changes that may have resulted from training. These factors would be important to assess in the future to better understand actual training gaps.

Patient feedback

NTP managers were asked whether a mechanism was in place for soliciting patient feedback. Among national level NTP managers, only 1 of 4 respondents said there was such a mechanism. At the district level 15 of 18 said there was, with most feedback received through patient complaint boxes and exit interviews. Whether a mechanism was in place to solicit patient feedback was, unfortunately, not asked at the facility level.

Causes of Non-adherence

When NTP TB managers were asked about the causes of provider non-adherence to TB guidelines, the most frequently cited were: lack of provider skills/knowledge (30%), provider attitude or behavior (21%), and patients themselves (21%). The provider skills that need to be improved most, according to TB managers, were: request for appropriate lab test (21%), MDR-TB management (20%), side effect management (17%), and appropriate drug regimens (17%).

Quality of Care

Information was gathered about the knowledge and skills of providers to provide “standard” TB services, their interpersonal communication and counseling skills, and the extent to which they follow national and service delivery standards. To do so, data collectors observed the interaction between 83 service providers (assigned to TB service delivery) and their clients in public, NGO, and private health care facilities from the community to district levels (i.e., NTP service providers at district and sub-district levels, including outdoor physicians, TB and leprosy control assistants, community health care workers at community clinics, NGO service providers, and providers at private clinics/hospitals, and pharmacists and village health doctors). In addition, other TB providers (83) – working in various settings from the village to district level and including public, NGO, and village health doctors and private health care facilities – were asked to complete self-administered questionnaires to measure their knowledge about TB, guidelines, norms, and protocols and to assess potential barriers to provider adherence. Because village doctors play an important role in providing health care and advice in Bangladesh, data collectors conducted structured interviews with an additional 18 village doctors to assess their knowledge of TB, role in TB case detection and treatment, attitudes toward TB patients, and the level of supervision and monitoring they receive.

To determine patient satisfaction with the quality of care provided, 110 exit interviews were conducted with TB patients and persons with presumptive TB who obtained services from public facilities – the NICHHD, district hospitals, UHC, and village-level health centers.

Provider Interaction

The provider observations showed that in general provider-client interactions were very good: all providers warmly greeted patients and introduced themselves, looked at the client from time to time, encouraged the clients to ask questions, treated the patient with respect, and used words that were easy to understand. All of these behaviors are essential in providing quality services.

Exit interviews with TB patients and persons with presumptive TB showed that patients were satisfied with the interaction with their provider. Practically all patients (98%) said the provider treated them with

respect, listened to their concerns, and let them ask questions. There were no significant differences between responses by males and females. Satisfaction with care was generally higher at the district, sub-district, and community levels than at the national level.

Information Provision

Patients appeared to be receiving basic information about TB. Most exit interviews with TB patients and persons with presumptive TB (85%) indicated that they received information about TB signs and symptoms from their providers, and most (86%) were told how TB is spread. However, there were gaps in providers' communications regarding TB treatment, screening of close contacts, and counseling patients on HIV.

Communication on TB Treatment: Provider observations showed that almost all providers asked patients about ongoing TB treatment (94%), previous treatments (96%), and medications (93%); explained the treatment regimen (91%); reinforced the importance of treatment adherence (93%); and explained/followed up on possible treatment side effects (91%). Importantly, the communication was higher among public and NGO health care providers than private providers (see Table 4).

In exit interviews conducted with TB patients and persons with presumptive TB, almost all (98%) said they received information on the importance of treatment completion. However, there was a gap in providing information about treatment side effects and their management, with 35% of patients responding

that they did not receive any information on that topic. Information provision regarding side effects was particularly poor among patients interviewed at the NIDCH, where 74% of respondents did not receive such information.

While all village doctors surveyed said that they provided information about TB to their clients, only 35% said they provided information about treatment adherence, only 27% on TB treatment, 24% on TB prevention, and 14% on treatment side effects.

Screening of TB contacts: In exit interviews, only about half (49%) of TB patients/persons with presumptive TB were given information about the need to have family members and close contacts screened for TB. Again, information provision was much lower at the national (11%) (NIDCH) than district, sub-district, or village level. Similarly, only 76% of observed providers suggested to the TB patient that their immediate contacts be screened for TB. The percentage doing so was highest among public and NGO providers (81% and 75%, respectively). Only 60% of private service providers did so. Even if initiatives are in place to introduce the guidelines on routine contact tracing, TB CARE II staff in Bangladesh provided anecdotal evidence that facility-level providers are not issuing contact slips or following up properly with TB contacts to improve case detection. The adult TB guidelines lack definite instruction for contact tracing.

Communication re: HIV: The provider observations also showed that communication about HIV with TB patients/persons with presumptive TB and identification of TB/HIV co-infected patients

Table 4. Provider Questions about TB Treatment and Treatment Adherence

Questions	Public	NGO	Private
	Yes N (%)	Yes N (%)	Yes N (%)
Checks if patient is under TB treatment and taking treatment regularly	43 (97%)	11 (92%)	13 (87%)
Asks about previous treatments	44 (100%)	11 (92%)	14 (88%)
Asks about other medications	41 (98%)	11 (92%)	12 (80%)
Explains treatment regimen	42 (95%)	11 (92%)	10 (78%)
Reinforces importance of treatment adherence	41 (98%)	11 (92%)	11 (79%)
Explains treatment side effects	41 (98%)	11 (92%)	11 (79%)
Prescribes TB treatment following DOTS	42 (98%)	10 (83%)	11 (73%)

was an uncommon practice at the facility level. Communication about this topic was lowest among private providers (6% versus 40% of public providers and 33% of NGO providers). Only 25% of public providers offered HIV testing and counseling to patients with unknown status, while 17% of NGO providers did and no private providers did (see Figure 4).

Exit interviews showed similar results, with only 16% of those interviewed being advised to have an HIV test. This is probably due to the low prevalence of HIV among the general population and the low proportion of HIV-positive individuals among TB cases: providers seem not to feel the need to advise every TB patient to be tested. Additionally, in Bangladesh there is still a gap in functional linkages between DOTS and VCT centers.

TB Diagnostic and Treatment Standards

While TB diagnostic and treatment standards seem to be available and are generally used, use is lower among private than public and NGO facility providers. In the provider-self assessment, 84% of providers stated that the TB diagnostic and treatment standards are available at their facilities. Whereas 100% of NGO providers and 87% of public providers said they were available, only 68% of private providers did so. Similarly, when asked “When you treat TB patients, do you follow the WHO protocol?” all NGO providers and 91% of public providers said

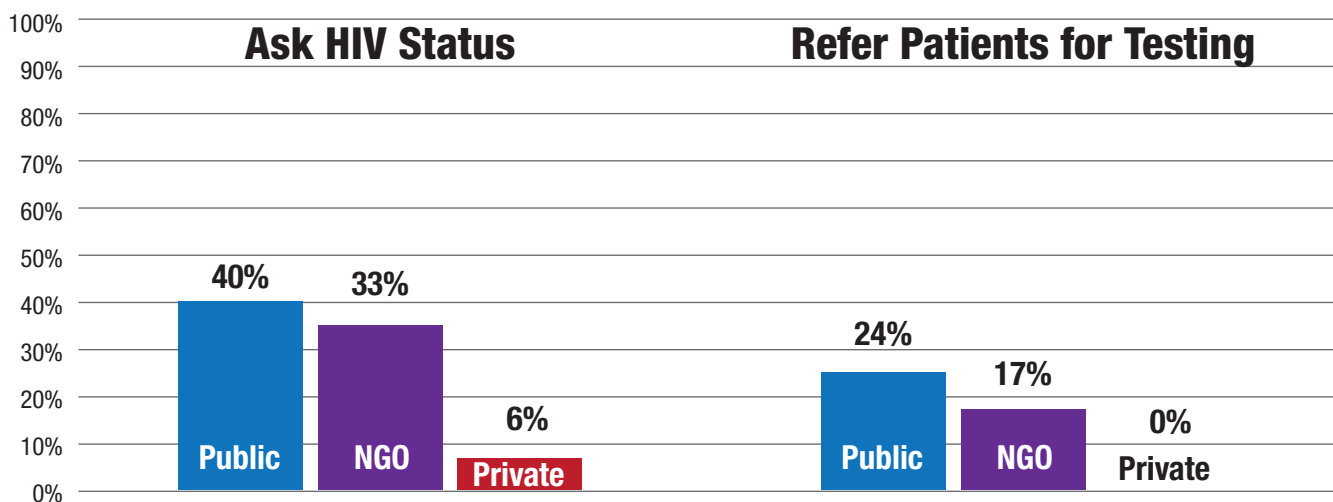
they did, while only 74% of private providers did (note: 9 out of 10 private doctors interviewed followed the protocol, but only 2 of 4 village doctors did). Similarly, while the provider observations showed that the vast majority of providers (92%) used an NTP-supplied set of TB diagnostic and treatment standards/guidelines, use was lower among private (70%) than public and NGO providers (100%). Use of the tool was also lower at the community level than at the district, sub-district, and union levels.

TB Case Detection

Provider observations and self-assessments showed that the most frequently used TB diagnosis method was sputum smears and chest X-rays. In the provider observations, 91% of providers used sputum smears and 85% used chest x-ray, and 71% used both in combination.

Village doctors play an important role in TB case detection in communities. Among village doctors, 7 out of 18 (39%) said that they diagnose TB patients. These are generally the village doctors who are linked with peripheral TB laboratories. Of those who diagnosed, the most frequent mode of TB diagnosis they used was to conduct a sputum smear or refer for one (52%) and to check for TB signs and symptoms (24%). Most village doctors said that they are not paid for their services. In Bangladesh, most village doctors have a small pharmacy outlet where they provide free consultancy services and sell medicines.

Figure 4. Percentage of Providers Asking About HIV Status or Offering Testing



Correct treatment/treatment adherence

TB treatment: Provider observations showed that 98% of public providers and 83% of NGO providers prescribed TB treatment following the DOTS protocol (four drugs during six months). Only 73% of private providers did so (Figure 5).

While most village doctors said they did not treat patients for TB (12 out of 18, 67%), the remaining 4 (22%) said that they did. Of those who treated patients, the number they treated ranged from 3 to 20 per month. The questionnaire did not ask whether these are new or existing patients or both or how they interpreted “treating” patients.

Asked what they do when they suspect that a patient has TB, most village doctors reported referring the patient to a health center (14/19 or 74%). Only 4 out of 19 (20%) referred patients to DOTS providers. Most felt that government/public facilities likely provided proper TB treatment in their catchment area. While most (13 out of 18, 72%) follow up with patients who come to them, mainly through verbal communication, a significant number do not (5 out of 18, 28%). All felt that cost should not be a barrier for TB treatment, as TB drugs are free through government health clinics.

DOTS/TB Patient Support

When TB patients register at the facility level in Bangladesh, the usual provider practice is to offer DOTS at the community level. Data from the provider self-assessments show that while most public and NGO

providers said they supervised TB DOTS supporter activities (86% and 77%, respectively), only 29% of private providers said they did. Data from the provider observations show that all public and 92% of NGO providers were indeed linking patients with community DOTS providers (Figure 6). However, only 73% of private providers were doing so. Similarly, during exit interviews with TB patients visiting public facilities, most of the patients (96%) responded that they were linked with DOTS supporters, getting medicine and good service, and being observed by the supporters. Almost all patients (93%) were satisfied with their DOTS support.

Figure 6. Percentage of Providers Linking Patients to DOTS

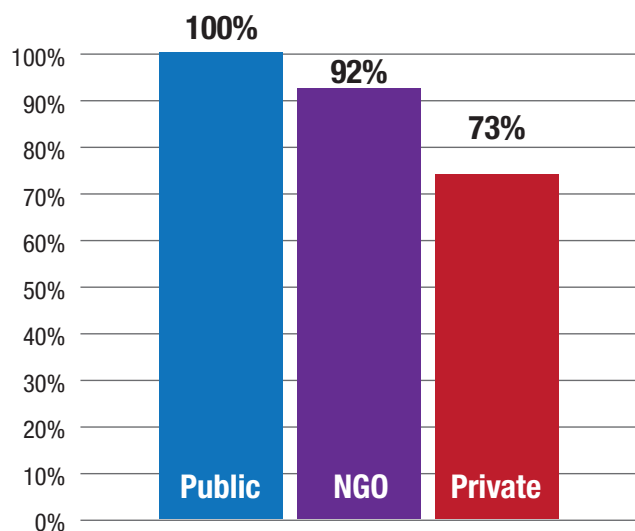
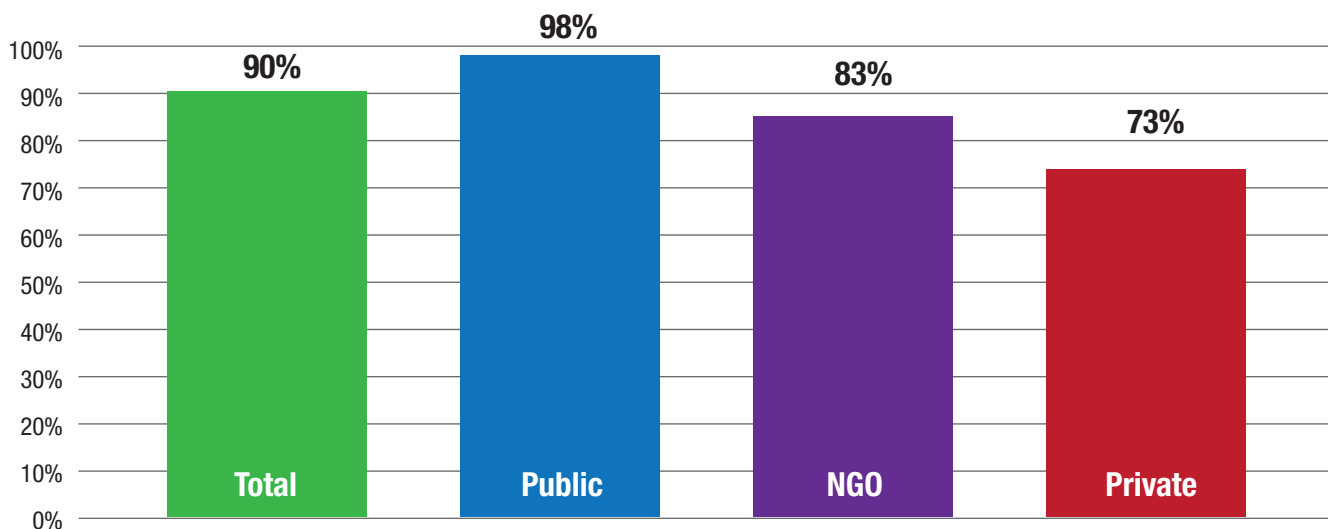


Figure 5. Percentage of Providers Prescribing TB Treatment Following DOTS Protocol



The provider observations also found, however, that fewer providers are following up and asking TB supporters about patient compliance with treatment regimen (74%) or checking patients' supporter-provided treatment cards (70%). Hardly any providers offered transportation vouchers, food support, group therapy, or work support; this type of support, however, is not currently a required service in Bangladesh for TB patients.

Infection Prevention

Almost all observed public (96%), NGO (100%), and private providers (89%) reviewed with the patient basic infection prevention measures (i.e., cover mouth and nose while coughing/sneezing, when to return to work, proper ventilation in the home, etc.). Seventy-four percent (74%) wore personal protective equipment; 87% ensured adequate ventilation in the examination room; and 96% washed their hands at the time of service provision. The questionnaire did not ask what types of personal protective equipment providers wore, though the research team reported that most providers were not using the N95 mask, the standard for infection control in high-risk zones.

TB Knowledge and Awareness

Knowledge of TB among TB providers was low. While most (82%) knew which tests are used to confirm pulmonary TB, most (81%) did not know which groups are at high risk of TB infection; the symptoms of pulmonary TB (65%); the first-line anti-TB drugs (64%); what multi-drug resistant TB meant (24%); and to whom HIV counseling and testing should be offered (26%). While most (82%) knew how a person gets TB, 17% still had misperceptions, such as that TB is transmitted by shaking hands, sharing dishes, eating from the same plate, etc. Knowledge of TB tended to be higher among public providers than NGO and private providers. However, it is noteworthy that although the knowledge test was pretested at the district level with NTP and private providers, it is very possible that the questionnaire failed to capture the true knowledge of TB among all levels of providers – especially those not accustomed to a self-administered testing format and those with low levels of education.

Among village doctors, only 7 out of 18 (39%) felt that TB was a very serious disease in their country. While most (67%) knew that a person can get TB through the air when a person with TB coughs or sneezes, 33% also cited misperceptions, such as by shaking hands (11%), sharing dishes (7%), eating from the same plate (7%), and touching items in public places (7%).

TB Attitudes

About half of providers (60%) in the provider self-assessment said they worry only “a little” about contracting TB when they treat a TB patient or person with presumptive TB. Twenty-eight percent (28%) said they worry “somewhat.” When village doctors were asked whether they worry about contracting TB, only 5 out of 18 (28%) said they do not worry at all, whereas 13 of 18 (72%) said they do have some worries.

Study Limitations

A primary study limitation was that we could not follow a random sampling method for the facility managers or service providers because each facility has only one person managing it and one person in charge of TB service delivery. Another study limitation was the small sample sizes per assessment. It was therefore not possible to do statistical analyses of significance, so only the results in the form of frequencies are presented. For the provider assessments, TB providers with varying levels of training were included in the sample. Ideally, much larger samples of each type of provider should have been interviewed to better differentiate responses among different types of providers.

Given that the findings were based on self-reports, the potential exists for response bias. Also, though the self-administered questionnaire was pretested to ensure that respondents understood the questions, the knowledge questions in the provider self-administered questionnaire may have confused some, especially those with lower literacy levels.

Recommendations

Quality of care is a priority concern worldwide. All countries are trying to improve the effectiveness and efficiency of the care that their medical systems deliver. As a result, the use of evidence-based clinical guidelines has become widespread and has been used to address many illnesses, including TB. Such guidelines explain the different steps of the process of managing specific health conditions.

The Bangladesh assessment revealed many reasons why providers may or may not be fully adhering with evidence-based TB guidelines. While evidence-based guidelines are key to improve the effectiveness and efficiency of the care that medical systems deliver, our assessment showed that the development and dissemination of guidelines is not sufficient to ensure adherence; many other factors must be in place to ensure quality health care: technical competence of

Figure 7. Dimension of Quality of Care

Dimensions of Quality



Source: Adapted from Center for Human Services. *Health Manager's Guide to Monitoring the Quality of Primary Care*. Bethesda, MD: Quality Assurance Project. 2000.

health providers, managers, and support staff; the effectiveness of service delivery norms and clinical guidelines; the interactions between providers and clients; client referral to continuous services; and a physical infrastructure and environment that encourages patients to visit a health care facility for services (see Figure 7).

Outlined below are our recommendations for improving provider adherence to evidence-based TB guidelines in Bangladesh, organized along some of these dimensions of quality care.

Technical Performance

TB Diagnosis and Treatment

The NTP has produced standards on TB diagnosis and treatment that are used and available at most NTP facilities, but not all private facilities. Proper TB diagnosis and treatment by providers requires knowledge and tools to diagnose and treat as well as the availability and understanding of TB diagnostic and treatment standards. While the assessment showed that most of the providers were trained in TB; almost a fifth said they had not. In addition, a training-knowledge gap seems to exist for diagnosis and treatment, since 65% of providers could not correctly identify the symptoms of pulmonary TB and only 64% knew what the first-line anti-TB drugs were. Also, while most public and NGO providers said that TB diagnostic and treatment standards were available at their facilities and that they followed WHO protocols when they treat TB patients, fewer private providers said they did so.

- All TB providers (including non-graduate private providers such as village doctors, service providers at pharmacy outlets, as well as traditional healers, community workers, and local leaders who are often the first contact for many TB patients) need to be well trained on TB diagnosis, including signs and symptoms of pulmonary TB, and treatment. Providers who were previously trained should get periodic refresher trainings, especially on areas where gaps in knowledge (i.e., basic TB knowledge, risk groups for TB, transmission of TB, standard TB drugs used in Bangladesh, and MDR-TB) exist as well as gaps in practice such as HIV and contact tracing. A standard training plan can be developed and implemented to determine routine and refresher training needs and schedules.

- The current content of the TB training program for health professionals should be investigated, including continuing medical education and in-service training. Assess the quality of the training currently being done, especially when training of trainers is used. To do this, one needs to look at both content and the skills of trainers.
- Conduct regular monitoring and evaluation of participants who were trained to evaluate knowledge, skills, and intention to change practice behaviors after the training. Post-course follow-up trainings would be useful three–six months after the initial training.
- Conduct regular supervision and mentoring of trained providers (see “Supervision, Mentoring, and Monitoring” section below).
- The NTP needs to develop a functional Training Management Information System to coordinate with the district-level NTP managers on newly recruited staff and those who need additional training. Currently, due to limited resources, the NTP needs to depend on donor support for conducting training. A well-coordinated and continuous TB training mechanism needs to be developed, ideally centrally funded with a training focal point at the NTP level, but operational at all levels to improve planning and meeting national and local training needs for public, NGO, and private (including village doctors) providers.
- Since MDR-TB is a growing concern in Bangladesh, and only 6% of facility managers said their facilities do MDR cultures – and only 24% of providers knew what MDR-TB meant, train providers on MDR-TB, especially while introducing newer technologies (GeneXpert machines), which are essential for rapid TB diagnosis.

All providers, public and private, who undertake to treat a patient with tuberculosis, must have the knowledge to prescribe a standard treatment regimen and the means to assess adherence to the regimen and to address poor adherence in order to ensure that treatment is completed.

Tuberculosis Coalition for Technical Assistance. *International Standards of Tuberculosis Care*. The Hague. 2006.

- While most providers – especially those from public facilities – prescribed TB treatment following DOTS protocol, refresher training in this area would be useful, especially for private sector providers, in addition to quality assessments of training and supervision and mentoring (as mentioned above). To reduce defaulter cases, improved providers' skills in providing information about the importance of treatment completion, explaining treatment regimens, and discussing possible TB drug side effects and their management are needed.
- Even though the NTP's education and orientation programs for village doctors have greatly reduced their prescribing TB medicines to patients, the data showed that a large number of village doctors still prescribe TB medicines. First contacts of most TB patients (i.e., traditional healers, village doctors, non-graduate practitioners) need to be re-oriented on TB service availability at the UHC level and on the need to refer TB patients and person with presumptive TB to public facilities. In addition, specific guidelines for village doctors on how to handle person with presumptive TB and cases would be beneficial.
- At the UHC service delivery facility, during weekly clinical updates, discuss TB guidelines/standards. This will act as refresher for service providers and onsite orientation for the newly recruited staff before the latter receive any formal training.

Health Counseling

- Train health care providers at all levels – especially village doctors and private sector providers – in effective communication with TB patients and person with presumptive TB. Currently the NTP does not have a separate training/orientation for counseling (only the management training for TB managers contains some relevant counseling information). Focus areas should include: need to screen TB contacts, asking a patient about other medications he/she is taking, explaining treatment regimens, reinforcing the importance of treatment adherence, possible treatment side effects, and communicating about TB/HIV. DOT providers should be included in the counseling training.

Health Management

Several facility managers said their facilities did not have essential drug lists or laboratory manuals – especially those in the private sector.

Essential Drug List

- Ensure that all public and private health care facilities have the essential drug list – especially those at the community level that are seeing TB patients – and follow up to ensure that TB providers are using them.

Laboratory Manual

- Ensure that all public and private health care facilities that have laboratories have laboratory manuals – especially those at the community-level – and follow up that the lab technicians are using them.

Effectiveness

Clinical Guidelines

The assessments showed that the main TB guideline accessible to NTP managers at national and district levels, as well as facility managers, are the TB adult guidelines. Fewer private facility managers tended to have access to the guidelines than NGO and public facility managers. Many managers at the facility level were not aware of the MDR-TB guidelines. Those for pediatric TB and infection prevention have been developed but not yet disseminated, illustrating a systems delay in getting documents from the NTP to the facility levels. Guidelines for XDR-TB, and mobile/vulnerable groups have not yet been developed.

- Create a system to ensure dissemination, availability, and awareness-raising of existing (especially newly developed) TB guidelines to all national and district-level NTP managers and public and private health care facilities from national to community levels.
- Develop and disseminate TB guidelines for XDR-TB and mobile/vulnerable groups.

Supervision, Mentoring, and Monitoring

The assessments showed that the NTP has a functional supervisory system in place, but that supervision is sometimes hampered by transport and resource constraints and as a result some providers (approximately 24%) are not receiving supervision. Regular supervision and monitoring of providers contributes to technical competence and provider performance.

- Ensure that all providers – including village doctors and private sector providers – receive regular supervision, mentoring, and monitoring on TB on a monthly to quarterly basis.
- Ensure that there is full or part-time dedicated and well-defined TB supervision capacity at the district, sub-district, union, and village levels.
- Develop an adequate feedback and follow-up system for supervision (both for supervision of providers as well as the supervisory system for drug forecasting and procurement) that goes beyond a written report and is provided after each supervisory visit.

Continuity of services

Continuity of services refers to the delivery of care by the same health care provider throughout the course of care (where appropriate) and appropriate and timely referral and communication between providers. In Bangladesh, while DOTS coverage is 100%, TB services are available from the national to the community level, and TB is integrated in the primary health care component of the National Health Service, TB Care II staff expressed the need for more extensive integration of TB integration service delivery and information into health care services such as maternal health, child health, etc. In addition, the assessment showed that improved TB/HIV integration and coordination (i.e., referrals, diagnosis of co-infected patients) is needed.

TB Drugs

The assessments showed that fewer facilities at the union and village levels had TB drugs than at the district and upazila levels. Less than half (43%) of facilities said they offer MDR-TB drugs.

- Ensure uninterrupted and timely supply of anti-TB drugs – including MDR-TB drugs – at all health care facilities, particularly at the union and village levels.
- While drug procurement processes were seen to be quite strong, ensuring continuous funding of drugs so as to avoid drug shortages is needed. Additionally, adequate follow-up on supervisory mechanisms to ensure timely drug forecasting and procurement is needed.

Record Keeping

- The record-keeping system on basic TB is functional through the NTP network; however, the data reveal that not all facilities have data on TB/HIV co-infected cases and an adequate contact-tracing mechanism. While HIV prevalence among the general population is very low in Bangladesh, the NTP is currently working on incorporating TB/HIV co-infected cases in the recording sheets. There are also gaps in recording MDR-TB cases (although Bangladesh has only limited cases enrolled for treatment). Systems for ensuring data use for decision-making are only sporadic and not practiced generally for service improvement. Ensure that TB medical records are accurate so that a new provider knows the patient's history and can build on and complement the diagnosis and treatment of previous providers.
- Facilities under the NTP network should initiate a system for issuance of contact slips and follow up using community health care providers. This will increase case notification rate, especially child TB cases, which have a low case notification rate. In addition, it is recommended that facilities have a contact registry.

DOTS Support

- Ensure that all providers link TB patients with community DOTS providers.
- Ensure that providers follow up and ask TB supporters about patient compliance with treatment regimens or check the patient treatment card provided by the TB supporter.

Other Support

- Ensure that there is a system in place to provide TB patients with other needed support, so that they do not default on treatment. For example, support with transportation vouchers, food support, linkages to group therapy, and/or work support.

Safety

Infection Control

- Ensure availability and proper use of N95 masks in health care facilities.

Physical Infrastructure/Comfort

- Feedback from patients about TB services is being obtained sporadically at the district level and implementing NGOs (through complaint boxes, exit interviews). The facility questionnaire did not assess whether client feedback was being obtained. Ideally a system should be developed where regular, systematic feedback from clients and providers is being obtained at the facility level. Such a system can first be initiated through the NTP network on the national level, from the NTP and then rolled out to local levels. Compliance to implementing this feedback mechanism needs to be regularly checked at the facility level.

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